What is claimed is:

1. A hot gas reheat circuit for use in a cooling loop, the cooling loop including a compressor having a high-pressure discharge side and a low-pressure suction side, a condenser and an evaporator, the hot gas reheat circuit comprising:

first means for controlling the flow of a refrigerant into the circuit in fluid communication with the discharge side of the compressor and switchable between a first position in which the high pressure refrigerant flows through the circuit and is blocked from flowing to the condenser and a second position in which the refrigerant flows to the condenser and is blocked from entering the circuit;

a reheat coil to exchange heat from the refrigerant flowing through the coil from the means for controlling the flow, to air flowing across the coil, the reheat coil in fluid communication with an evaporator in the cooling loop so as to provide refrigerant to the evaporator when the means for controlling is in the first position; and

a cooling by-pass circuit that provides fluid communication between the suction side of the compressor and the reheat coil that includes a second means for controlling the flow of excess refrigerant out of the circuit and switchable from a first position in which refrigerant flows from the hot gas reheat circuit when the first means for controlling is in its second position and a second position in which the flow of refrigerant is blocked from leaving the hot gas reheat circuit when the first means for controlling is in its first position.

2. The hot gas reheat circuit of claim 1 wherein the first means for controlling the flow of refrigerant into the circuit is a valve switchable between a first position in which refrigerant is directed through the circuit and a second position in which refrigerant is directed to the condenser.

3. The hot gas reheat circuit of claim 1 wherein the valve is a solenoid valve.

4. The hot gas reheat circuit of claim 1 further including a check valve positioned to prevent the flow of refrigerant into the reheat coil when the first means for

controlling the flow of refrigerant is in the second position and that passes refrigerant when the first means for controlling the flow of refrigerant is in the first position.

5. The hot gas reheat circuit of claim 1 wherein the cooing by-pass circuit includes a valve as the second means for permitting the flow of excess refrigerant out of the circuit in fluid communication with the suction side of the compressor and switchable from a first position in which refrigerant flows from the circuit when the first means for controlling is in its second position and a second position in which the flow of refrigerant is blocked from leaving the circuit when the first means for controlling is in its first position.

6. The cooling by-pass circuit of claim 5 wherein the valve is a solenoid valve.

7. The cooling by-pass circuit of claim 1 further including a check valve to prevent the flow of refrigerant to the condenser when the first means for controlling the flow of refrigerant is in the first position.

8. The hot gas reheat circuit of claim 1 wherein the reheat coil is positioned adjacent to the evaporator wherein cooled, dehumidified air flowing across the evaporator is heated prior to entering an interior space.

9. A system for providing humidity control and cooling for an interior space of a building, comprising:

a refrigeration circuit, wherein the refrigerant circuit comprises a compressor having a high pressure discharge side and a low pressure suction side, a condenser, and an evaporator in fluid communication, and wherein refrigerant fluid is circulated through the circuit;

at least one sensor to monitor at least one condition indicative of parameters in the interior space of the building;

a hot gas reheat circuit positioned to by-pass the condenser, the hot gas reheat circuit in fluid communication with the discharge side of the compressor and connected to the refrigeration circuit between the condenser and the evaporator, the reheat circuit including a reheat coil, a first valve positioned in the refrigeration circuit on the discharge side of

the compressor, and a cooling by-pass circuit, wherein the first valve selectively controls the flow of refrigerant between the reheat circuit and the compressor, the cooling by-pass circuit including a second valve that selectively allows a flow of refrigerant from the reheat circuit to the suction side of the compressor, and wherein the reheat coil is positioned between the interior space of the building and the evaporator to heat air to a preselected temperature after it passes across the evaporator;

a reheat by-pass circuit positioned to by-pass the compressor, the reheat-bypass circuit in fluid communication with the condenser and suction side of the compressor, the reheat by-pass circuit including a third valve, the third valve positioned to selectively permit the flow of refrigerant from the condenser to the suction side of the condenser when the first valve selectively controls the flow of refrigerant to the hot gas reheat circuit;

a blower to assist the delivery of air to the interior space, and;

a controller in communication with the first valve, the second valve the third valve and at least one sensor to selectively position the valves in response to a signal from the at least one sensor to selectively flow the refrigerant to one of the hot gas reheat circuit and the condenser.

10. The system of claim 9 wherein the refrigeration circuit further includes a check valve to prevent the flow of refrigerant from the hot gas reheat circuit to the condenser.

11. The system of claim 9 wherein the hot gas reheat circuit further includes a check valve to prevent the flow of refrigerant from the condenser to the hot gas reheat circuit.

12. The system of claim 9 wherein the first valve is solenoid valve.

13. The system of claim 9 wherein the second valve is a solenoid valve.

14. The system of claim 9 wherein the third valve is a solenoid valve.

15. The system of claim 9 wherein the at least one sensor includes a temperature measuring device for monitoring the temperature of the interior space.

16. The system of claim 9 wherein the at least one sensor includes a humidity measuring device for monitoring the humidity of the interior space.

17. The system of claim 9 wherein the at least one sensor monitors an operating condition of the operation of the refrigeration circuit indicative of parameters in the interior space of the building.

18. The system of claim 9 wherein the at least one sensor includes a temperature measuring device for monitoring the outside temperature.

19. The system of claim 9 wherein the at least one sensor includes a humidity measuring device for monitoring the outside humidity.

20. The system of claim 9 further including a second refrigeration circuit for providing additional cooling to the interior space, the second refrigeration circuit including a second compressor, a second condenser, and a second evaporator.

21. The system of claim 20 further including a supplemental heater to heat air delivered to the interior space to a preselected temperature.

22. A method of providing conditioned air to an interior space of a building, the method comprising the steps of:

providing a first refrigeration circuit, wherein the first refrigerant circuit comprises a first compressor, a first condenser, a first evaporator, and a hot gas reheat circuit, wherein flow of a compressed refrigerant gas from the first compressor is switchable between the first condenser and the hot gas reheat circuit so that hot, high-pressure gas from the first compressor is cycled through one of the first condenser and the hot gas reheat circuit, and then to the first evaporator and back to the first compressor, so that conditioned air can be provided to the interior space of the building and wherein the hot gas reheat circuit includes a coil to heat the air for the interior space after it passes over the evaporator when the hot gas reheat circuit is activated, wherein the hot gas reheat circuit further includes means for removing refrigerant from the hot gas reheat coil to a suction side of the compressor when the hot gas reheat circuit is

inactivated and wherein the coil in the hot gas reheat circuit is disposed adjacent to the first evaporator;;

providing a second refrigerant circuit, wherein the second refrigerant circuit comprises a second compressor, a second condenser and a second evaporator, wherein the flow of compressed refrigerant gas from the second compressor flows to the condenser, to the evaporator and back to the compressor, so that cool, dehumidified air can be provided to the interior building space;

providing at least one sensor indicative of at least one condition in the in the interior space of the building, the at least one sensor providing at least one signal indicative of the at least one condition in the interior building space;

providing a controller to receive the at least one signal indicative of the at least one condition in the interior building space and to control the operation of the first refrigerant circuit and the second refrigerant circuit in response to the at least one received signal , wherein control of the first refrigerant circuit further includes switchably controlling the refrigerant flow through one of the first condenser and the hot gas reheat circuit in response to the at least one received signal so that one of a conditioned air selected from the group consisting of dehumidified air and cooled air can be provided to the interior building space;

enabling the first refrigerant circuit to provide cooling of air for the interior space in response to a signal from the controller;

dehumidifying the air for an interior space in response to a signal from the controller by activating the hot gas reheat circuit to provide refrigerant from the first compressor to the reheat coil heat the air to a first preselected temperature prior to delivering the air to the interior space; and

enabling the second refrigeration circuit to provide cooling of air for the interior space in response to a signal from the controller.

23. The method of claim 22 further including a step of providing at least one sensor to monitor the temperature of air passing over the first and second evaporator and provide a signal to the controller indicative of the temperature, and providing a

heater to heat to a preselected temperature air passing into the interior space from the first evaporator and the second evaporator in response to a signal from the controller.

24. The method of claim 22 wherein the means for removing refrigerant from the hot gas reheat coil to a suction side of the compressor when the hot gas reheat circuit is inactivated further includes a cooling by-pass circuit, the cooling by-pass circuit selectively providing fluid communication between the coil and the suction side of the compressor.

25. The method of claim 22 further including a step of removing refrigerant from the first condenser when the hot gas reheat circuit is activated.

26. The method of claim 23 wherein the step of removing refrigerant further includes moving refrigerant from the first condenser to the suction side of the compressor.

27. A method of providing conditioned air to an interior space of a building, the method comprising the steps of:

providing a refrigeration circuit, wherein the refrigerant circuit comprises a compressor, a condenser, an evaporator, and a hot gas reheat circuit, wherein flow of a compressed refrigerant gas from the compressor is switchable between the condenser and the hot gas reheat circuit so that hot, high-pressure gas from the first compressor is cycled through one of the first condenser and the hot gas reheat circuit, and then to the first evaporator and back to the first compressor, so that conditioned air can be provided to the interior space of the building, and wherein the hot gas reheat circuit includes a coil to heat the air for the interior space after it passes over the evaporator when the hot gas reheat circuit is activated, wherein the hot gas reheat circuit further includes means for removing refrigerant from the hot gas reheat coil to a suction side of the compressor when the hot gas reheat circuit is inactivated and wherein the coil in the hot gas reheat circuit is disposed adjacent to the evaporator;;

providing at least one sensor indicative of at least one condition in the in the interior space of the building, the at least one sensor providing at

least one signal indicative of the at least one condition in the interior building space;

providing a controller to receive the at least one signal indicative of the at least one condition in the interior building space and to control the operation of the refrigerant circuit in response to the at least one received signal, wherein control of the refrigerant circuit further includes switchably controlling the refrigerant flow through one of the condenser and the hot gas reheat circuit in response to the at least one received signal so that one of a conditioned air selected from the group consisting of dehumidified air and cooled air can be provided to the interior building space;

enabling the refrigerant circuit to provide cooling of air for the interior space in response to a signal from the controller; and

enabling the dehumidification of air for the interior space in response to a signal from the controller by enabling the hot gas reheat circuit to provide refrigerant from the compressor to the reheat coil heat the cooled, dehumidified air to a preselected temperature prior to delivering the air to the interior space.

28. The method of claim 27 further including a step for removing refrigerant from the condenser when the hot gas reheat circuit is activated.

29. The method of claim 27 wherein the step of removing the refrigerant from the condenser includes providing the refrigerant to the suction side of the compressor.